

Claims**1. An electric toothbrush comprising:**

a motor;

a brush body pivoted so as to freely rotate about a rotating shaft which forms a predetermined angle with a driving shaft of the motor;

a lever member which is provided between the motor and the brush body and is pivoted so as to swing about a predetermined swinging shaft;

a first motion converting mechanism which is provided between the driving shaft of the motor and a first end portion of the lever member positioned at the side of the motor and converts rotating motion of the driving shaft of the motor into swinging motion of the lever member; and

a second motion converting mechanism which is provided between the brush body and a second end portion of the lever member positioned at the side of the brush body and converts swinging motion of the lever member into reciprocal rotating motion of the brush body.

2. The electric toothbrush as stated in claim 1, wherein

the first motion converting mechanism is comprised of an eccentric member which is coupled to the driving shaft of the motor, has an eccentric shaft and rotates about the driving shaft corresponding to rotating motion of the driving shaft, and a joint portion which is provided at the first end portion of the lever member,

comes into contact with an outer peripheral face of the eccentric shaft of the eccentric member, and converts rotating motion of the eccentric shaft into swinging motion of the lever member, and the swinging shaft may form an optional angle including right angle with respect to the driving shaft of the motor.

3. The electric toothbrush as stated in claim 2, wherein the eccentric shaft of the eccentric member is comprised of a roller which rotates about an axis in parallel with the driving shaft of the motor.

4. The electric toothbrush as stated in claim 1, wherein the first motion converting mechanism is a slider-crank mechanism for converting rotating motion of the driving shaft of the motor into reciprocal linear motion of the first end portion of the lever member.

5. The electric toothbrush as stated in claim 1, wherein the second motion converting mechanism is comprised of a pin provided at one of the second end portion of the lever member or the brush body and a groove which is provided at the other of the second end portion of the lever member or the brush body and with which the pin is slidably engaged, and an axis of the pin may form an optional angle including right angle with respect to the longitudinal direction of the groove.

6. The electric toothbrush as stated in claim 1, wherein a

swinging plane of the second end portion of the lever member is not parallel with the driving shaft of the motor and forms a predetermined angle with respect to the driving shaft of the motor.

7. The electric toothbrush as stated in claim 6, wherein the rotating shaft of the brush body forms a predetermined angle except substantially right angle with respect to the swinging plane of the second end portion of the lever member.

8. The electric toothbrush as stated in claim 6, wherein the lever member is provided with an inflected portion between the swinging shaft and the first end portion or the second end portion, and a cross section orthogonal to the swinging plane is formed substantially in a dog-legged shape.

9. The electric toothbrush as stated in claim 6, wherein the swinging shaft of the lever member forms a predetermined angle except substantially right angle with respect to the driving shaft of the motor.

10. The electric toothbrush as stated in claim 1, wherein bending rigidity of the lever member is set so that swinging range of the second end portion of the lever member becomes smaller as a load transmitted from the brush body to the lever member through the second motion converting mechanism is increased.

11. The electric toothbrush as stated in claim 1, wherein the rotating shaft of the brush body is supported by a holding member held so as to freely rotate in the three-dimensional direction.

12. The electric toothbrush as stated in claim 11, wherein a head portion provided with the lever member and the brush body is formed so as to detachable from a grip portion provided with the motor.

13. An electric toothbrush comprising:

a motor;

a brush body pivoted so as to freely rotate about a rotating shaft which forms a predetermined angle with a driving shaft of the motor;

a plurality of lever members which is provided between the motor and the brush body, each pivoted so as to swing about a predetermined swinging shaft and coupled with each other so as to freely swing in the reverse direction to each other;

a first motion converting mechanism which is provided between the driving shaft of the motor and a first end portion of the lever member closest to the motor among the lever members and converts rotating motion of the driving shaft of the motor into swinging motion of the lever member; and

a second motion converting mechanism which is provided between the brush body and a second end portion of the lever member

closest to the brush body among the lever members and converts swinging motion of the lever member into reciprocal rotating motion of the brush body.

14. The electric toothbrush as stated in claim 13, wherein a rotating plane of any lever member among a plurality of the lever members is inclined with respect to a rotating plane of other lever member.